PO54 - 24993 - INFLUENCE OF DIETARY FIBERS ON THE BIOACCESSIBILITY OF GLUCOSE RELEASED FROM RICE DURING DYNAMIC IN VITRO GASTROINTESTINAL DIGESTION

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Abstract

Dietary fibers, known for their health benefits, namely reducing the probability rates of heart diseases, type 2 diabetes, colon cancer, etc., influence how nutrients and chemicals are absorbed in the gastrointestinal tract. In this sense, an *in vitro* dynamic gastrointestinal model was used to evaluate the bioaccessibility of glucose released during the digestion of whole grain rice (WGR) and white rice (WR). This model allows the quantification of absorbed glucose by simulating the passive absorption of small molecules/water through a hollow fiber system.
Rice samples were cooked and grinded before being submitted to the *in vitro* digestion, which consisted in the simulation of the mouth, stomach, duodenum, jejunum and ileum. Samples were collected after the oral phase, from the stomach (60 and 90 min) and duodenum reactors (120 min), and from the filtrates (from jejunum and ileum) and non-filtrated (ileum delivery) portions.
Glucose released until 120 min was similar for both samples, with 5.90% of glucose from WGR and 5.53% from WR. Major differences were then observed when analysing the absorbed glucose, collected from the filtrates' portions. Glucose from the WR sample was absorbed in substantially higher quantities in the jejunum (6.73%) and ileum filtrates (7.29%) compared to the glucose absorbed from the WGR sample (1.80% in jejunum and 0.74% in ileum filtrates).
These absorption differences could be correlated to the lower quantity of glucose released during digestion of WGR sample (13.49% released from WGR and 46.98% from WR), and to WGR's higher fiber content (presence of germ and bran). Bioaccessibility of glucose from the WGR sample was inferior, since only 18.81% of available glucose was absorbed as opposed to 29.83% of the WR sample.
The use of a (more realistic) dynamic *in vitro* GI system allowed confirming the importance of the presence of fibers in the control of sugars absorption during digestion.

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